



# BADRAKH

October  
2019

## NEWSLETTER



Zuuvch Ovoo Pilot Test temporary facilities  
Ulaanbadrakh soum, Dornogobi aimag

### NEW DEVELOPMENTS TAKING PLACE IN THE GOBI EXECUTIVE GREETINGS



**Zakariae El Marzouki**  
Executive Director of Badrakh Energy LLC

French state-owned Orano Group and Mongolian state-owned Mon-Atom jointly established Badrakh Energy LLC for the purposes of implementing the Mongolian Government's policy on the radioactive mineral industry and conducting the development and mining of the uranium deposit. The activities of the joint venture were activated in 2017 and completed on the planned schedule the construction of the Zuuvch Ovoo Pilot plant on the territory of Ulaanbadrakh soum in Dornogobi aimag. This Pilot plant will precisely ascertain the technical and economic indicators of the deposit within the next two years, confirming among others the limited impact on the environment with the possibility to perform the natural remediation

Badrakh Energy actively participates in the development of Dornogobi aimag. We have made cooperation agreements with the governances – Governors of Ulaanbadrakh soum and Zuunbayan bagh of Sainshand soum of Dornogobi aimag on July 25th, of 2018. These Cooperation agreements gave to the parties the guidelines and directions for selecting and implementing the projects and programs to support the socio-economic development in the region. During the project implementation period the Local cooperation councils that we have formed back to 2013 together with the local administration will administer special supervision.

Thus in beautiful Eastern Gobi a new path has been created that will allow Mongolia to keep the same pace with the development of the mankind. Our staff and teams are proud to be able to participate in body and spirit in this development.

#### Key Dates of Major Events

- 2013 • Resources classification of the Zuuvch Ovoo deposit
- 2013 • Signature of Shareholder Agreement of AREVA Mines LLC
- 2015 • Approval of the Zuuvch Ovoo Project Feasibility Study
- 2016 • Granting of 3 mining licenses
- 2017 • Mon-Atom takes 34% share of capital
- 2018 • AREVA Mines LLC becomes Badrakh Energy
- 2018 • Zuuvch Ovoo pilot test site constructed
- 2018 • Cooperation Agreement with Ulaanbadrakh Soum and Zuunbayan Bagh has been established

#### The New Website and Facebook Page of Badrakh Energy LLC Have Been Launched!

In line with our policy to develop a transparent and open dialogue with all stakeholders, through our web site which provides all contents in Mongolian and English, we are delivering information on who we are, what we do and how we do in a pedagogical and interactive way. You will definitely find interesting figures and facts on our company going through its different sections as Home page, Zuuvch Ovoo Project, ISR, Uranium, Employees, Environment and Communities. Do not forget to share and recommend our web site to anyone who wants to know about our company, about ISR technology, about Uranium and our commitments towards Health and Safety, Environment Protection and Support to the Local Communities.



Do not forget to follow us on Facebook to be updated on the progress of our project!  
<https://www.facebook.com/badrakhenergy>





## Young College Students Have Made Their Professional Trip

On June 14–15, 2019, a total of 6 undergraduate students and 2 students in master degree visited the Project site of Badrakh Energy LLC. These students are specializing in nuclear technology at the School of Applied Sciences and Engineering of the National University of Mongolia. After having been given a safety induction and a presentation about geology, exploration, the students started their field visit at the site where the in-situ recovery technology test was successfully completed in 2010 and 2011. The students were introduced to the main principles of the ISR technology and its advantages in comparison to the traditional mining methods. They also had an opportunity to visit the Zuuvch Ovoo Pilot Test facility.

The environmental and radiation protection specialists of the company showed to the students how the environmental remediation is done on the drilling platforms. The students visited also the mud pit and made the radioactivity measurements which were at the natural background level. B.Khaliun, student in master degree highlighted: "I am happy to personally visit the site activities of the Mongolian and French joint company and to see how teams are working in comfortable environment. We saw ourselves how the rehabilitation works are very well done. I think I will write my master's thesis on the water resource rehabilitation in this region." The students and Professor N. Norov thanked Badrakh Energy LLC for having accepted their request to welcome them to the site of the company for a field visit for the 5th year.

## Transparent Environmental Monitoring

Participatory Environmental Monitoring Program (PEMP) has been successfully implemented since 2013 by Badrakh Energy LLC with local authorities and citizens from Sainshand and Ulaanbadrakh soums of Dornogobi aimag. Since 2017 the water samples are extracted from six wells jointly identified and sent to be analyzed in the laboratories chosen by local people. Radioactivity measurements are also made in the field. Results are presented and reported to the representatives of local administration and communities.

The citizens who would like to participate in the Participatory Environmental Monitoring Program can send themselves their requests to the Environmental and Radiation Protection Team or Sustainable Development and Local Affairs Team of Badrakh Energy LLC or through an environmental specialist at their respective local administration or soum and bagh. Upon the submission of the requests, the Company will invite the individuals to the PEMP campaigns already scheduled.

To increase the participation of junior rangers in the environmental protection and monitoring, this campaign welcomed school children from the Ulaanbadrakh soum school in 2015 and in 2017 the students specializing in nuclear technology of National University of Mongolia.



15+ Participative Session monitoring conducted since 2014





## We Take Pride in Our Careful and Precise Youth

### *Successful Venture in Occupational Safety*

During the event which took place in Dulaan-Uul on June 17th of 2019, “Live-saving 5 Anchors” was discussed, interesting speeches were presented and the importance of using Personal Protection Equipments (PPE) were also reminded of. This year of 2019, our group highlighted “the 5 Anchors which are explicit and an integral part of everyone's daily work”. The 5 anchors must be applied by everyone at all levels, and the compliance with them shall help you to prevent yourselves from being exposed to severe and fatal hazards.

Badrakh Energy LLC team has no Lost Time Injuries (LTI) and 2 near misses over 2018 and the first 9 months of 2019, this is a positive performance. However, our efforts should be maintained to achieve our goals for this year. The occupational safety relies heavily on our daily habits and how we conduct our every action. Thus, let us be reminded that you and your colleague's safety relies heavily on your awareness and care.







## We Are All Neighbors Who Share the Same Life

*Orano Mining Decided to Support the FXB Project for 3 More Years*

Since 2016 Orano Mining, one of the shareholders of Badrakh Energy fully finances the deployment of the FXB\* project in Dornogobi aimag. The program is aiming to let hundreds of families to increase their revenues and enable them to achieve social and economic independence. The 100 families were supported with training on the issues of nutrition, health, lodging and education and were provided with seed money in addition to theoretical knowledge and practical advice to start income-generating activities during the first project implemented between 2016–2018. Starting from 2019 another 100 families are supported on the same principles as for the previous years.

At the end of the 1st program, 100% of the families became able to sustain themselves financially through their various income-generating activities and 80% of them have savings. The team of Badrakh Energy LLC with Orano Mining is delighted to be able to continue contributing to social and economic development of the local citizens by extending for 3 years until 2021 this project that had brought important benefits to the population of Dornogobi aimag.







## Youth Spirit

### *Local Young People Working at the Zuuvch Ovoo Pilot Test*

Twenty operators and helpers employed at the Zuuvch Ovoo Pilot Test are hired from Ulaanbadrakh soum and Zuunbayan bagh, Sainshand soum. All these young people were enrolled last year in a 10 days capacity building training organized by Badrakh Energy LLC on June 25th and July 5th of 2018. This training of total of 86 hours of theoretical and practical classes was successfully organized in cooperation with Ulaanbadrakh soum Governor Office and the Vocational Training Center of Dornogobi aimag at the soum. The capacity building training was composed of the following 4 majors:

- Occupational Health and Safety,
- Basics of mechanics,
- Basics of electricity,
- Basics of chemistry theory.

In total, 63 people: 6 from Zuunbayan bag and 57 from Ulaanbadrakh soum, were selected to be enrolled in the training. At the end of the training, 41 people passed their exams. 21 people got the Certificate.

Mrs. B.Ganchimeg, HR Director of Badrakh Energy LLC noted: "This Capacity Building Training is the first training of this kind organized successfully. We are very pleased to see local young people to be interested in the technical fields. As Badrakh Energy LLC needs in trained and motivated operators and helpers, we are happy to see some of these young people among our staff."

## Stronger Together

### *Cooperation Agreement with Ulaanbadrakh Soum and Zuunbayan Bagh has Been Established*

Badrakh Energy LLC entered into the cooperation agreement with the governors of Ulaanbadrakh soum and of Zuunbayan bagh in Sainshand soum in Dornogobi province on July 25, 2018. Badrakh Energy LLC is pleased to be organizing the selection and implementation of the sustainable development projects and programs according to this agreement jointly with the Communication and Implementation Committees that include the representatives of the Parties.

The parties signed the cooperation agreement pursuant to 42.1 of Minerals Law of Mongolia. By this Agreement, the parties have mutually agreed to work for the sustainable social, cultural and economic development of the communities in Ulaanbadrakh soum and Zuunbayan bagh.

As agreed by this agreement the company will make necessary attention to the local development along the following engagement pillars:

- Access to water
- Health
- Livestock health
- Education
- Culture
- Access to energy
- Economic development

The projects are selected on the basis of the mutual agreement of the Parties and through the Communication and Implementation Committees\*.

The agreement is effective for two years with the possibility to be renewed for a maximum of twelve months if agreed between the parties.

\* These committees are composed of representatives of the governor's office and the Company and also of the people native to this sum and the bagh that have been selected by the Citizens' Representatives Assembly of the aimag.





## Future Solution for Energy

### What do we know about uranium?

Atoms, energy, nucleus, reactors, nuclear bombs, radioactivity, radiation therapy, radiation duration, and other applications of radioactivity are all covered in the general education curriculum of highly developed countries. In other words, highly developed countries place value on supporting school children to understand physical science and the associated social issues on a theoretical and practical level. Even though Mongolia ranks among the top countries in the world for literacy, Mongolia has to make progress in terms of the knowledge and application of science. This can be observed in most Mongolian people's misperception and fear of uranium.

The smallest units that form a chemical element are atoms. Every atom is composed of a nucleus and electrons that surround it. We have all learned in middle school that the nucleus exists in either a stable or unstable state and all materials containing such unstable nuclei are considered radioactive. Natural elements, such as uranium, thorium, and potassium, emit radiation. The natural radiation also comes from the sun, cosmic rays, soil and rocks. On average, the radiation exposure of humans on Earth due to all natural sources amounts to about 2.4 mSv (millisieverts) per year, though this figure can vary, depending on the geographical location of the person.

In Mongolia's case, the average person living in Ulaanbaatar is exposed to 1.5mSv of natural radiation per year. This is so called "background radiation". On top of this, people can be exposed to artificial radiation created by human activity like medical examinations. We could receive a dose of 0.1 mSv for a medical chest x-ray, up to 1.5 mSv for a Computed Tomography (CT) scan, and 0.04 mSv dose of radiation when flying from Ulaanbaatar to Europe. The annual limit for added dose for the general population is 1mSv as recommended by the International Commission on Radiological Protection (ICRP) This leads me to think that unfortunately today we forgot what we have learnt in a secondary school.

### What do we not know about uranium?

Natural uranium is 40 times more common than silver and 500 times more common than gold. Seawater alone contains 4 billion tons of uranium. The primary use of uranium is to produce energy. There is a formula that suggests that the more energy a country produces, the more developed that country will be. Out of the 7 billion people that inhabit earth, 2 billion people live in conditions where energy is inaccessible and many people are unable to connect to a reliable source of electricity. On the one hand, nuclear energy technology has much more potential and capacity compared with other sources of energy. On the other hand, this much potential and capacity requires the utilization of the latest technology, high safe operation standards, and high skilled labor.

The amount of uranium needed to power a home of an average family for a year can fit it the palm of your hand. One gram of Uranium produces as much heat as 2.8 tons of coal. World energy consumption



outlook implies that there will be a supply deficit of energy by the year 2030 and that the nuclear energy has a major role to play. Therefore, uranium is of strategic importance to any country, although it is not an easy task to succeed and become a player in the uranium industry. Currently, less than 10 countries control the entire uranium market. You may be surprised to find out that the biggest player in the industry is Kazakhstan, whose starting point was exactly the same as Mongolia's current situation today. The other major players are Canada, Australia, Niger, Russia, Namibia, Uzbekistan, USA and Ukraine.

## What should we know about uranium?

As the world has become more global, the issues that countries used to face individually have become collective issues that all countries must face together. One indicator of this phenomenon is the United Nations Sustainable Development Goals–2030. These are a collection of 17 long-term global goals based on three broad segments – society, economics, and environment. One of the 17 goals is the issue of climate change and it is an issue that all 200 countries must resolve together.

Human beings cause the emission of billions of tons of greenhouse gases each year. Greenhouse gases' emissions continue to rise and, if this carries on, mankind may face extinction. The consequences of increasing greenhouse effect gases emissions include natural disasters such as fire, drought, heavy storms and rising tides, resulting from severe changes in our climate. We all know that

the simplest and cheapest way to decrease greenhouse effect gases level is to plant trees. However, scientists have recently confirmed that no matter how many trees we plant, we will never be able to decrease greenhouse effect gases level sufficiently. Trees absorb carbon dioxide and release oxygen, but there is not enough area on earth to plant the trees we would need to solve the problem. We would need 7 million square kilometers of land in order to get rid of 3 billion tons of carbon dioxide every year, which is only 10 percent of the total carbon dioxide we emit every year. 7 million square kilometers of land is more than four times the size of Mongolia. Even if we assumed that we could plant trees all over the surface of earth, it would bring counterproductive consequences such as the downfall of the agricultural industry, leading to world hunger.

Even though world politicians, scientists, researchers are actively looking for solutions to this problem, it is obvious that the only way to solve this problem is to take decisive and daring measures against climate change. The nuclear energy may be a very effective solution to this problem, as nuclear electricity generation is virtually free of greenhouse gas emissions during power plant operations. In 2015, there were a total of 1.25 million electric cars worldwide. Automobile manufacturers have all announced that they will be transitioning to the production of electric cars and the projected number of electric cars is 20 million by 2020, 200 million by 2030 and 1 billion by the year 2050. It is clear that conventional sources of energy are not going to be able to supply this much demand for electricity.

Mongolia is among the leading nations with the most 'approved' uranium resources. Researchers talk about how Mongolia could be the leading nation in nuclear raw

material resources if it incorporated potential resources as well. Mongolia counts today approximately 200 nuclear specialists. The Government of Mongolia announced last year a Three Pillar Development Policy that focuses on good governance, social development, and diversifying the economy. Mining industry experts advocate for a diversification of the mining industry to decrease its dependency on coal, gold and copper. Uranium has the opportunity to become a heavyweight contender in the Mongolian mining sector. Mongolia has enough resources, logistics, geographical advantage, friendly relations with the world's leading nations, and human capital to become a major competitor on the global arena. Can Mongolia use this opportunity shrewdly to make a breakthrough on the world stage and become a new player in the mining and energy industry?

**Ganzorig.V**  
Columnist

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## The ISR technology has been used across the world, but is new in our country.

A uranium deposit is mined through several world-known technologies, open, underground mining and the in-situ recovery (ISR), which is not known among the Mongolian public. Although the people do not know about it, this technology has been used in many countries for over forty years to mine many other minerals. 50 percent of the total uranium recovered in the world is mined through the in-situ recovery method. Kazakhstan, USA, Australia and Russian Federation mine through the in-situ recovery method. Orano Group successfully employs the in-situ recovery

technology in Kazakhstan, the world leader in uranium mining.

- “In-situ” is a Latin word that means “in place” or “in the natural or original position”. It is used in “In-Situ Recovery” because with ISR, the target metal is recovered from its deposit without excavating the host rock.
- ISR utilizes wells to inject a leach solution into the ore zone. Acidified water is the most frequent type of leach solution used in ISR. The acid solution dissolves the uranium while moving

through the ore in a controlled manner to reach pumping wells (also called recovery or production wells), where it is pumped to surface for processing. Uranium is extracted from the solution to produce a saleable uranium concentrate.

- For ISR to be effective, the ore zone must be located in a permeable formation, such as sand. This formation should be naturally isolated by non-permeable rock, such as clay, located above and below the ore zone.

Professor N. Norov, the sectoral manager of the Nuclear Physics Research Center at the Mongolian National University, was the first person to specialize in nuclear power stations in Mongolia.

*He spoke to explain about uranium deposits in Mongolia: “Uranium has 20 million times more energy than coal. Our country has two types of deposits, which reserves have been determined. There is a Mardai group, consisting of five deposits. They all have a volcanic origin. The other type is the deposits that were created by water, as those in Dornogobi and Dundgobi. They are said to have a hydrogenic origin. Uranium, which was in the surface granite, is washed with water and this water flows on and reaches a still place, where uranium is accumulated. That is how the uranium ore forms.*





Compared with other mining methods, ISR has become popular because it has economical, technical and environmental advantages over conventional open cast or underground mining. For example, the public recognizes that this method causes no earth-moving with a minimal visual disturbance. Moreover, there is no creation of waste dumps or tailings and thus the capital costs are lower. Besides these advantages, the quantity of dust is very low during the mining with ISR. The employees are not in a direct contact with uranium since it moves through a closed circuit which means they are at lower risk in terms of health and safety.

There was a technological pilot at the Dulaan Uul deposit in 2010–2011 in Mongolia. It was confirmed that this deposit could be mined with the in-situ recovery technology. The preparation is now complete to start a two-year long production pilot on the Zuuvch Ovoo site.

Project Affairs Manager A. Bayarmaa told about it: “Our pilot processing plant is not a nuclear facility for enriching the uranium isotope. It is just a pilot plant that will produce a uranium concentrates which will be a wet yellow cake or ammonium diruranate; according to the law that says that the final product produced in Mongolia shall be yellow cake.”

#### **Is there a danger to the drinking water of herders?**

Anybody who heard about uranium mining believes that it will pollute the groundwater and cause harm to the livestock and animals.

The major environmental issue associated with ISR is the protection of groundwater.

Groundwater conditions in the Zuuvch Ovoo area have been studied since 2006 through a network of 200 monitoring wells. Based on this monitoring network, it is confirmed that:

- The deep aquifer that contains the mineralization is well isolated from



the shallow aquifer by numerous clay barriers. In case if the mineralization containing layer is not isolated by clay barriers on top and bottom, the ISR cannot be used.

- Groundwater is characterized by naturally high concentrations of sodium, chlorine, uranium and many other elements. As a result, groundwater chemistry is not suitable for drinking purposes according to national and international standards.

#### **Rehabilitation after mining**

It is certainly normal to ask what happens after mining on the site. Compared to the traditional method, the natural rehabilitation after the in-situ recovery method can be done much easier. After mining through the in-situ recovery method, only boreholes remain. It was tested in this type of deposits in foreign countries that using the natural rehabilitation method would be appropriate out of all numerous rehabilitation solutions.

Orano Group collaborated with its partner Kazatomprom and successfully performed many studies on

understanding the natural rehabilitation more comprehensively and on how to activate and speed it up (by employing the bio-rehabilitation means).

Professor N. Norov said: “The uranium ore is very meager in our country. Its grade is 0.025 percent on average. It is an indicator of a poor ore. Such ore can only be mined with the in-situ recovery method. There will be no destruction of the environment. Mongolians are closer to getting “the food on the table”.



## Khadbaatar.S: It was interesting to receive my first salary in dollars and making a purchase with it

We talked with Khadbaatar.S, a Driver of “Badrakh Energy” LLC. It was clear that he takes pride in his work.



### Since when did you start working for “Badrakh Energy” LLC?

First of all, I would like to thank you for choosing to interview me out of all our employees at our company. I would also like to send my greetings to our fellow employees and the local people reading this interview.

I was initially employed by “Cogegobi” company in the year 2007. During that time, I was very happy to be one of the only two people employed from the local area. One other female employee from the local area was employed with me.

Afterwards, there were many others who were employed from the local area.

I was initially employed as an assistant and became a driver soon afterwards.

### What was your previous job before joining this company?

There are not many stable jobs in the Soum level other than being a government official or civil servant. It's hard to find a job even if you try hard. So I used to run my own auto repair shop.

### Tell us about typical day at work?

I have breakfast from 07:00–08:00 in the morning and work according to my schedule afterwards. Our senior gives us safety instructions before we begin our work. This is our very first meeting of the day. Our auto base consists of 3 mechanics, 1 road roller operator, and 3 drivers. The three drivers take turns in work shifts. While one driver takes time off, the other two drivers go on the road. When we're not on the road, we

spend our time doing maintenance work on our cars. Before we go on long trips, we always ensure that our cars go through check-ups.

**Even though being a driver looks like an easy job, it must be difficult to travel according to specific routes and working according to specific schedules as instructed and guided by others. How do you overcome these difficulties?**

Our company is extremely punctual. Even though we are drivers, we only work during working hours. Working overtime or driving over the speed limit is prohibited for us. Our upper management abides by the law very well. There is a speed limit when driving in the countryside. Every car has a GPS system installed, which is used to monitor the driving speed and route of the cars. If we're driving from Dornogobi Aimag



to Sukhbaatar Aimag, we spend the night in Khentii Aimag to rest. There is a rule to rest every two hours of driving when we're going on long trips. There is no fear of getting lost since we have GPS systems installed in every car and satellite radio as well.

**It seems that there are many places that you have to travel to such as Dornogobi Aimag, Sukhbaatar Aimag and Ulaanbaatar City...**

There are lots of different duties to fulfill such as driving employees who come from Ulaanbaatar via trains to the camp site, turning over shifts, and serving the managers at the camp site.

**The understanding on uranium is relatively new. Do people from the local area ask you about this?**

The people from our Soum have gained general knowledge about this. However, there are people who don't even want to understand. For me, I have been working for my company for more than 10 years. I haven't suffered or lost anything so far. I go through health check-ups every year so there is nothing to worry about for me in terms of health. On the other hand, there are many things I have gained by working here.

**What kind of changes has your family experienced during this time?**

We moved from living in the soum to the capital of the province. We are living in an apartment now. 2 out of our 3 children have graduated from universities and are working now. The other one is currently a university student.

**When do you feel the proudest of your job?**

I always feel proud of my job. I feel inspired and motivated when my efforts are rewarded and I can feel real positive changes in my life. There are many young local people who were employed here after me and they're making a good living through their hard work as well.



**What is the most memorable thing which has left an impression on you?**

When I was initially employed here, the first 2–3 years, I used to receive my salary in dollars. It was the first time that I have held a dollar in my hand. It felt interesting for me to go into the store and making a purchase in dollars. After the government has proposed that only national currency is to be used in local transactions, I started receiving my salary in Mongolian Tugriks.

**In recent years, the average number of people involved in fatal car accidents are increasing. As a driver, what do you wish to say to fellow drivers?**

I would like to say to fellow drivers to maintain their speed in moderation and adjusting their headlights well when driving at night. It is difficult to drive at night. Some drivers don't adjust their headlights at all. There are many road accidents which are caused by this simple mistake.

**Herders especially oppose the topic of uranium because they feel that it is harmful. Are there any people from your soum who has been harmed by the effects of uranium? Also, what is your standpoint on the mining of uranium?**

Even though there was an incident of many calves being poisoned, it was later inspected and concluded that it was not caused by effects of uranium. Currently, there is only exploration work being conducted.

I believe that it is right for our country to exploit our uranium deposits by utilizing world standard technology. I've heard that large cities of the world use nuclear power plants to produce energy. Furthermore, I think that there is a possibility to make Ulaanbaatar city free from pollution.





## Cluff Lake: From Cradle to Grave

*Example of open pit and underground uranium mines*

The Cluff Lake mine located in north-west Saskatchewan Province of Canada, over 850 kilometers north of Saskatoon, is owned by Orano, and operated from 1980 to 2002 producing about 62 million pounds of uranium concentrate and 8,000 troy ounces of gold.

The mine site included four open pit mines and two underground mines. There was a mill complex to process the uranium ore, several buildings such as warehouses, a water treatment plant, a tailings management area to manage processing wastes, the Germaine Camp to house the employees, and an airstrip to bring employees and supplies to the site.

Traditional land use, such as trapping, fishing and berries picking, was carried out nearby throughout the operating period.

The Cluff Lake mine served as the largest industrial employer on the west side of northern Saskatchewan over its mine life. Company employees averaged around 200 and, with on-site contractors, indirect and induced jobs, employment in support of the Cluff Lake mine was estimated to be over 900 persons at its peak in 1996. About 80% of northern employees were from the west side of the province

The site underwent remediation from 2004 to 2006: filling-in of open-pit mines, rendering secure of underground

mining works, demolition of the treatment mill and buildings, coverage of tailings re-contouring of waste rock piles and demolition of the Germaine Camp area. Nearly 640,000 indigenous trees were planted with help from local residents to accelerate the natural process of re-vegetation.

During and after the closure of the mine, Orano has been monitoring the environment all along, including the surface water quality. Of the lakes considered to have mining impacts, the results show that water quality meets and will continue to meet surface water quality objectives into the future. Radiological monitoring



Cluff Lake  
Saskatchewan Province, Canada

also shows that radon concentrations are at background level, and gamma and long-lived radioactive dust levels pose no unacceptable risk to traditional land uses. Radiological clearance has been achieved.

### Commitments to stakeholders

Stakeholder engagement was also a priority in the decommissioning planning and decision-making. The decommissioning engagement strategy was to engage early and often with the neighbours so that feedback could be properly considered.

Orano conducted personal interviews, meetings and workshops with community leaders, elders, long-time residents, business people, northern Saskatchewan environment quality committee members, former mine employees and their families, youth and land users who were known to harvest in the vicinity of the mine.

The primary influence of these engagement activities was in the decommissioning design to provide a safe traditional land use over time.



## MYTH

Once the uranium is sold, Mongolia will be under obligation to accept the corresponding nuclear waste.

Uranium mining and processing are linked to stillbirths, birth defects and cancers.

Uranium mining puts traditional activities such as animal breeding in danger

Uranium mining and processing pose a serious health risk to workers and those who live near facilities where these activities take place.

Data on the environmental performance of uranium mines and processing activities is secret.

Uranium mining and processing lead to the proliferation of nuclear weapons.

## FACT

Once it is sold, the uranium belongs to the customer that uses it to produce electricity and not to the producing company or country. The buyer of uranium should make arrangements to manage its waste.

Uranium mining and processing activities do not cause stillbirths, birth defects or cancer in humans or animals. Natural uranium that is removed from a mine and processed into uranium concentrate for nuclear reactors simply does not pose such risks. Natural uranium is only mildly radioactive. If absorbed in large quantities, its main health risks relate to kidney damage. However, the public is not exposed to any levels that could cause kidney damage as a result of uranium mining and processing activities.

Herders will be able to continue to live on uranium exploitation licensed properties for the duration of the uranium mine operations. In foreign countries we can witness how farms coexist with the uranium mines. In the countries such as Kazakhstan, herders are still animal breeding in their native regions. Local communities also actively participate in collecting samples that are used to conduct environmental monitoring, as is the case in the Participatory Environmental Monitoring program set up by the Badrakh Energy company.

Present-day uranium workers and people living near the facilities are as healthy as the general population. The Professional Inspection Authority exercises a regular control on the radiological safety.

Detailed environmental impact assessments of uranium projects are available and can be viewed on the Ministry of Environment and Tourism website. The annual results of environmental management plans are communicated to the authorities at the bag, soum and aimag levels.

Control systems and rigorous inspection programs governed by the International Atomic Energy Agency (IAEA), of which Mongolia is a member, are in place to ensure that no uranium from Mongolia will be used to produce nuclear weapons or military equipment. All uranium is accounted for from the moment it leaves a mine until it is disposed of.



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